

**REMARKS**

Applicants respectfully request reconsideration of the above-identified application in view of the foregoing amendments and the following remarks.

In the October 29, 2003 Office Action, the Examiner noted that claims 1-9 were rejected. By this Amendment, claims 2 and 4 are amended. Claim 4 is amended to correct a typographical error. Applicants believe that claims 1-9 are in condition for allowance. The Examiner's rejections are respectfully traversed below.

**Rejection Under 35 U.S.C. § 112, second paragraph**

In the October 29, 2003 Office Action, the Examiner rejected claim 2 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically, the Examiner stated that the term "resol type" rendered the claim indefinite.

Applicants are of the opinion that claim 2 is in fact definite. However, so as to further emphasize the invention, Applicants have amended claim 2 to recite the term "resol phenolic resin" as opposed to "resol type phenolic resin."

Accordingly, Applicants respectfully submit that claim 2 satisfies the requirements of 35 U.S.C. §112, second paragraph. Withdrawal of this rejection is respectfully requested.

**Rejection Under 35 U.S.C. § 102(e) - Twardowska**

In the October 29, 2003 Office Action, the Examiner rejected claims 1-9 under 35 U.S.C. § 102(e) as being anticipated by Twardowska (US 2003/0105208 A1).

Applicants respectfully submit that Twardowska is not prior art to Applicants' above-captioned application. Applicants filed the above-captioned application on January 15, 2002, claiming priority under 35 U.S.C. § 119 to Japanese Application Serial No. 2001-011833 filed

January 19, 2001, and submitting priority documents. In the October 29, 2003 Office Action, the Examiner acknowledges Applicants' claim to priority.

Contrary to the requirements of 35 U.S.C. § 102(e), Twardowska was not filed in the United States before the invention of Applicants' invention. Twardowska was filed in the United States on October 23, 2001. By virtue of the filing date of Japanese Application Serial No. 2001-011833, the date of Applicants' invention is January 19, 2001, or earlier. Thus, Twardowska is not prior art to Applicants' invention.

Accordingly, withdrawal of this rejection is respectfully requested.

**Rejection Under 35 U.S.C. § 102(b) - Symons**

In the October 29, 2003 Office Action, the Examiner rejected claims 1, 2, 3 and 9 under 35 U.S.C. § 102(b) as being anticipated by Symons (U.S. Patent No. 5,309,690).

Symons discloses a composite panel comprising first and second sheets of a natural fibre material, a cellular core of a natural fibre material sandwiched between and adhered to the first and second sheets, and a filler composition located in all of the cells of the core, said filler composition comprising a mixture of an inorganic insulating material and a material which releases water at elevated temperatures. *Col. 1, lns. 30-43*. The inorganic insulating material is preferably selected from the group consisting of, *inter alia*, exfoliated vermiculite, expanded perlite and expanded clay. *Col. 5, lns. 12-18*.

The present invention is drawn to a phenolic resin composite material comprising a phenolic resin, a filler dispersed in the phenolic resin, and an organized layered clay mineral dispersed uniformly in the phenolic resin. *See, e.g., claim 1*. The term "organized layered clay mineral" refers to a layered clay mineral which is organized by an organic onium ion. *See paragraph [0017] of Applicants' specification*. An "organized layered clay mineral" is formed

by mixing a layered clay mineral with an organic onium salt in water so that the layered clay mineral is ion-exchanged with the organic onium ion. *See paragraph [0037] of Applicants' specification.* Examples of the layered clay mineral are given in paragraphs [0019] – [0020] of Applicants' specification and include smectite-based clay minerals such as montmorillonite, hectorite, vermiculite and swelling micas. Examples of the organic onium ion are given in paragraphs [0022] – [0024] of Applicants' specification.

Symons does not disclose an “organized layered clay mineral,” *i.e.*, a layered clay mineral organized by an organic onium ion, as required by Applicants' claims. Thus, Applicants respectfully request withdrawal of the rejection of claims 1, 2, 3 and 9 under 35 U.S.C. § 102(b).

**Rejection Under 35 U.S.C. §103(a) – Ninomiya**

In the Office Action, the Examiner rejected claims 1-3, 5, 7 and 9 for obviousness under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,391,959 B1 (Ninomiya).

Ninomiya discloses a phenolic resin composition for fiber-reinforced materials comprising a phenolic resin and at least one thermoplastic resin. *Col. 3, ln. 61 – col. 4, ln. 6.* Ninomiya further discloses the desirability of adding fine inorganic grains to the resin composition such as, for example, clay, mica and bentonite. *Col. 9, lns. 9-33.*

The present invention is drawn to a phenolic resin composite material comprising a phenolic resin, a filler dispersed in the phenolic resin, and an organized layered clay mineral dispersed uniformly in the phenolic resin. *See, e.g., claim 1.* The term “organized layered clay mineral” refers to a layered clay mineral which is organized by an organic onium ion. *See paragraph [0017] of Applicants' specification.* An “organized layered clay mineral” is formed by mixing a layered clay mineral with an organic onium salt in water so that the layered clay mineral is ion-exchanged with the organic onium ion. *See paragraph [0037] of Applicants'*

*specification*. Examples of the layered clay mineral are given in paragraphs [0019] – [0020] of Applicants' specification and include smectite-based clay minerals such as montmorillonite, hectorite, vermiculite and swelling micas. Examples of the organic onium ion are given in paragraphs [0022] – [0024] of Applicants' specification.

However, Ninomiya neither teaches nor suggests the inclusion of an "organized layered clay material" in its phenolic resin compositions, as required by Applicants' claims. Thus, Ninomiya cannot render obvious Applicants' claims 1-3, 5, 7 and 9. Accordingly, withdrawal of this rejection is respectfully requested.

**Rejection Under 35 U.S.C. §103(a) – Juenger**

In the Office Action, the Examiner rejected claims 1-3, 5-7 and 9 for obviousness under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 3,830,894 (Juenger).

Juenger discloses phenol resin foam materials and a process for the preparation of filled phenol resin foam materials containing a skeleton-like mass of particulate filler material. *Col. 1, lns. 15-20*. Examples of filler materials include vermiculite, exfoliated clay and mica. *Col. 2, lns. 28-41*.

The present invention is drawn to a phenolic resin composite material comprising a phenolic resin, a filler dispersed in the phenolic resin, and an organized layered clay mineral dispersed uniformly in the phenolic resin. *See, e.g., claim 1*. The term "organized layered clay mineral" refers to a layered clay mineral which is organized by an organic onium ion. *See paragraph [0017] of Applicants' specification*. An "organized layered clay mineral" is formed by mixing a layered clay mineral with an organic onium salt in water so that the layered clay mineral is ion-exchanged with the organic onium ion. *See paragraph [0037] of Applicants' specification*. Examples of the layered clay mineral are given in paragraphs [0019] – [0020] of

Applicants' specification and include smectite-based clay minerals such as montmorillonite, hectorite, vermiculite and swelling micas. Examples of the organic onium ion are given in paragraphs [0022] – [0024] of Applicants' specification.

However, Juenger neither teaches nor suggests the inclusion of an "organized layered clay material" in its filled phenol resin foam materials. Applicants' claims require an "organized layered clay material." Thus, Juenger cannot render obvious Applicants' claims 1-3, 5-7 and 9. Accordingly, withdrawal of this rejection is respectfully requested.

**Rejection Under 35 U.S.C. §103(a) – Juenger in view of Ross**

In the Office Action, the Examiner rejected claims 4 and 8 for obviousness under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 3,830,894 (Juenger) in view of U.S. Patent No. 6,610,770 B1 (Ross).

Juenger discloses phenol resin foam materials and a process for the preparation of filled phenol resin foam materials containing a skeleton-like mass of particulate filler material suitable as a homogeneous construction material wherein the interspaces between the filler are filled with the phenolic resin foam. *Col. 1, lns. 15-20*. Examples of filler materials include glass fibers, wood shavings, vermiculite, exfoliated clay and mica. *Col. 2, lns. 28-41*. Ross discloses a composition comprising a polymer system and a smectite clay modified with an organic chemical composition. *Col. 4, lns. 1-5*. The resultant plastic/organoclay product of Ross has qualitatively different fire retardant properties from those exhibited by the polymer system. *Col. 4, lns. 9-12*.

Applicants have discovered that when a filler is dispersed in a phenolic resin and when an organized layered clay mineral, which is different from the filler, is uniformly dispersed in the phenolic resin with the filler dispersed therein, it is possible to further improve the heat

resistance and the mechanical strength of the resulting phenolic resin composite material. *See paragraphs [0008] and [0012] of Applicants' specification.* Thus, the present invention is drawn to a phenolic resin composite material comprising a phenolic resin; a filler dispersed in the phenolic resin and being a reinforcement member; and an organized layered clay mineral being different from the filler and dispersed uniformly in the phenolic resin. *See, e.g., claim 4.*

Juenger does not disclose, teach or suggest that the filler be dispersed in the phenolic resin, as required by Applicants' claims. Instead, Juenger discloses a skeleton-like mass of particulate filler wherein the interspaces between the filler are filled with phenolic resin foam. *Col. 1, lns. 15-20.*

Further, there exists no teaching or suggestion to modify Juenger to include the modified clay of Ross. According to Juenger, "[d]epending upon the type and quantity of the substance used as filler, improvements in the mechanical resistance, such as the compression strength, the resistance to bending, the tensile, impact and shearing strength, the resistance to abrasion, and the resistance to fire, etc., may be attained" with the filled phenol resin foam materials of Juenger. *See col. 2, lns. 36-41.* There is no teaching or suggestion that Juenger's filled phenol resin foam materials might benefit by the addition of the modified clay of Ross. Further, Ross does not disclose said modified clay in the abstract, but in combination with a polymer system so as to form a composition with fire retardancy.

Thus, Juenger in view of Ross neither teaches or suggests a phenolic resin composite material comprising a phenolic resin; a filler dispersed in the phenolic resin and being a reinforcement member; and an organized layered clay mineral being different from the filler and dispersed uniformly in the phenolic resin. Because Juenger in view of Ross cannot render Applicants' claims 4 and 8 obvious, withdrawal of this rejection is respectfully requested.



**CONCLUSION**

Based on the foregoing amendments and remarks, Applicants respectfully request reconsideration and withdrawal of the rejection of claims and allowance of this application.

**AUTHORIZATION**

The Commissioner is hereby authorized to charge any additional fees which may be required for consideration of this Amendment to Deposit Account No. 13-4500, Order No. 5000-4985.

In the event that an extension of time is required, or which may be required in addition to that requested in a petition for an extension of time, the Commissioner is requested to grant a petition for that extension of time which is required to make this response timely and is hereby authorized to charge any fee for such an extension of time or credit any overpayment for an extension of time to Deposit Account No. 13-4500, Order No. 5000-4985.

Respectfully submitted,  
MORGAN & FINNEGAN, L.L.P.

Dated: January 29, 2004

By: Steven F. Meyer  
Steven F. Meyer  
Registration No. 35,613

**Correspondence Address:**

MORGAN & FINNEGAN, L.L.P.  
345 Park Avenue  
New York, NY 10154-0053  
(212) 758-4800 Telephone  
(212) 751-6849 Facsimile